

CLAIMS

1. A nucleic acid construct having a promoter sequence, at least one protein-encoding nucleotide sequence linked to the promoter sequence in a translatable state, and a poly A signal sequence, wherein

the nucleic acid construct further contains, between the promoter sequence and the poly A signal sequence, a nontranslatable nucleotide sequence that is different from the protein-encoding nucleotide sequence,

the protein-encoding nucleotide sequence linked to the promoter sequence in a translatable state and the nontranslatable nucleotide sequence that is different from the protein-encoding nucleotide sequence are linked together so that they are transcribed from the nucleic acid construct in a single RNA molecule, and

the nontranslatable nucleotide sequence is selected from the group consisting of:

(1) a nucleotide sequence that encodes a protein or a part of the protein; and

(2) a nucleotide sequence of an untranslated region that is naturally located on the 5' or 3' side of a nucleotide sequence that encodes a protein.

2. The nucleic acid construct according to claim 1, wherein the nontranslatable nucleotide sequence is

located downstream of the protein-encoding nucleotide sequence linked to the promoter sequence in a translatable state.

3. The nucleic acid construct according to
5 claim 1, wherein the nontranslatable nucleotide sequence is located upstream of the protein-encoding nucleotide sequence linked to the promoter sequence in a translatable state.

4. The nucleic acid construct according to
10 claim 1, the protein-encoding nucleotide sequence linked to the promoter sequence in a translatable state encodes a reporter protein.

5. A vector containing the nucleic acid construct defined by claim 1.

15 6. An RNA containing at least one protein-encoding nucleotide sequence in a translatable state and a nontranslatable nucleotide sequence that is different from the protein-encoding nucleotide sequence, wherein the nontranslatable nucleotide sequence is selected from the
20 group consisting of:

(1) a nucleotide sequence that encodes a protein that is different from the protein-encoding nucleotide sequence in a translatable state, or a part of the protein; and

25 (2) a nucleotide sequence of an untranslated

region that is naturally located on the 5' or 3' side of a nucleotide sequence that encodes a protein that is different from the protein-encoding nucleotide sequence in a translatable state.

5 7. A method of detecting an activity of altering expression of a target gene by a functional nucleotide molecule, the method comprising the steps of:

10 (1) transcribing an RNA from the nucleic acid construct defined by claim 1 or the vector defined by claim 5 which has, as a nontranslatable nucleotide sequence, a nucleotide sequence selected from the group consisting of a nucleotide sequence that encodes a protein in a target gene, a part of the nucleotide sequence, and an untranslated region that is located on the 5' or 3' side of the 15 nucleotide sequence that encodes the protein in the target gene;

 (2) contacting a nucleotide molecule with the RNA transcribed in step (1);

20 (3) detecting the RNA in step (2) or a translation product translated from the RNA; and

 (4) detecting an activity of altering expression of the target gene by a functional nucleotide molecule based on the amount of the RNA or the translation product translated from the RNA detected in step (3).

25 8. A method of detecting an activity of

altering expression of a target gene by a functional nucleotide molecule, the method comprising the steps of:

(1) contacting a nucleotide molecule with the RNA defined by claim 6 which has, as a nontranslatable nucleotide sequence, a nucleotide sequence selected from the group consisting of a nucleotide sequence that encodes a protein in a target gene, a part of the nucleotide sequence, and an untranslated region that is located on the 5' or 3' side of the nucleotide sequence that encodes the protein in the target gene;

(2) detecting the RNA in step (1) or a translation product translated from the RNA; and

(3) detecting an activity of altering expression of the target gene by a functional nucleotide molecule based on the amount of the RNA or the translation product translated from the RNA detected in step (2).

9. A method of screening for a functional nucleotide molecule that alters expression of a target gene, the method comprising detecting an activity of altering expression of a target gene by a functional nucleotide molecule according to the method defined by claim 7 or 8.

10. The method of detecting an activity of altering expression of a target gene by a functional nucleotide molecule according to claim 7 or 8, wherein the nucleotide molecule is contacted with the RNA in a cell or

in a cell-free protein synthesis system.

11. A method of screening for a gene whose expression is altered by a nucleotide molecule, the method comprising the steps of:

5 (1) transcribing an RNA from the nucleic acid construct defined by claim 1 or the vector defined by claim 8 which has, as a nontranslatable nucleotide sequence, a nucleotide sequence selected from the group consisting of a nucleotide sequence that encodes a protein in an arbitrary 10 gene, a part of the nucleotide sequence, and an untranslated region that is located on the 5' or 3' side of the nucleotide sequence that encodes the protein;

(2) contacting a nucleotide molecule with the RNA transcribed in step (1);

15 (3) detecting the RNA in step (2) or a translation product translated from the RNA; and

(4) identifying a gene whose expression is altered by the nucleotide molecule based on the amount of the RNA or the translation product translated from the RNA 20 detected in step (3).

12. A method of screening for a gene whose expression is altered by a nucleotide molecule, the method comprising the steps of:

(1) contacting a nucleotide molecule with the RNA defined by claim 6 which has, as a nontranslatable

nucleotide sequence, a nucleotide sequence selected from the group consisting of a nucleotide sequence that encodes a protein in an arbitrary gene, a part of the nucleotide sequence, and an untranslated region that is located on the 5 5' or 3' side of the nucleotide sequence that encodes the protein;

(2) detecting the RNA in step (1) or a translation product translated from the RNA; and

10 (3) identifying a functional nucleotide molecule that alters expression of a target gene based on the amount of the RNA or the translation product translated from the RNA detected in step (2).

13. The method of screening for a gene whose expression is altered by a nucleotide molecule according to 15 claim 11 or 12, wherein the nucleotide molecule is contacted with the RNA in a cell or in a cell-free protein synthesis system.